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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,393	09/06/2000	Kenneth M. Levine	24379	9357

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EXAMINER	
BOYCE, ANDRE D	
ART UNIT	**PAPER NUMBER**
3623	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/656,393	LEVINE ET AL.	
	Examiner	Art Unit	
	Andre Boyce	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21 and 26-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21 and 26-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Final office action is in response to Applicant's amendment filed October 16, 2006. Claims 1, 18, 26 and 43 have been amended. Claims 22-25 have been canceled. Claims 1-21 and 26-49 are pending.

2. Applicant's arguments filed October 16, 2006 have been fully considered but they are not persuasive.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4-10, 12-21, 26, 27, 29-35 and 37-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Sisley et al (USPN 5,943,652).

As per claim 1, Sisley et al disclose a computer implemented method for managing mobile workers (i.e., assignment and scheduling (A/S) system 12, column 5, lines 27-29) in an object oriented programming environment (i.e., common lisp

object system, column 5, lines 31-35) comprising the steps of: classifying within a database of a computer a plurality of target objects corresponding to facilities assets to be worked on by a mobile worker (i.e., field service environment characterized by three representational sets, including a call set defined by a plurality of customer service calls, column 5, lines 49-56); defining the attributes of each target object, including the tasks to be performed on each target object (i.e., assignment set defined by a plurality of assignments of calls to the technicians, column 5, lines 56-57); scheduling mobile workers for the tasks to be performed on target objects by running a rule engine to determine the algorithms and heuristics to be used to schedule mobile workers for the tasks to be performed (i.e., A/S system 12 generates assignment and scheduling recommendations, representing modifications of the assignment set, column 5, lines 59-63); and outputting a schedule of jobs to the mobile workers (i.e., output to interactive user interface 18, figure 1), and further comprising the step of creating jobs as a collection of tasks for a target that is to be scheduled (i.e., field service environment is characterized by three representational sets having dynamic attributes, including a call set defined by a plurality of customer service calls requiring repair services to be scheduled, column 5, lines 49-57) and controlled by a policy as the definitions, rules and business factors that control the behavior of system agents (i.e., the assigner module determines the service territory and skill level of each of the technicians by accessing the technician data structure, as determined by the requirements of the service organization, column 9, lines 26-34), comprising a planner agent that inventories items requiring work and

determines tasks to schedule, the skills required to complete the tasks and material needs (i.e., A/S system 12 searches for assignment solutions, including attributes for each of the service calls and attributes for each of the assignments, column 6, lines 5-24); a schedule agent that matches skill resources to the demands of the job and creates a proposed schedule (i.e., A/S system 12 generates assignment and scheduling recommendations, representing modifications of the assignment set, column 5, lines 59-63); a dispatcher agent for tracking the location and status of the workforce (i.e., user interface 18 receives field event data from the technicians, column 6, lines 35-41); a job state manager that maintains the state of active jobs and determines which jobs transition to new states (i.e., the assigner module 22 continuously updates the technician and call data structures to reflect changes in the field service environment, column 7, lines 37-40); and an event bus operative (i.e., service management system (SMS) interface 14, figure 1) with the system agents and database, wherein said system agents communicate across the event bus with the database and rule engine for implementing system agent functions based on events passed over the event bus (i.e., SMS interface 14, including the SMS translator 16 which receives the SMS access process 15 and translates it into SMS events for A/S system 12, column 6, lines 42-46).

As per claims 2 (and 27), Sisley et al disclose classifying the plurality of target objects within a server computer and outputting the schedule to a client computer operated by a mobile worker (i.e., interactive user interface 18, column 5, lines 39-41).

As per claims 4 (and 29), Sisley et al disclose the step of building a plurality of user configured system agents for one of at least automating work planning, scheduling tasks to workers (i.e., A/S system 12 generates assignment and scheduling recommendations, representing modifications of the assignment set, column 5, lines 59-63), dispatching workers, stores management, job state management or end-of-shift management.

As per claims 5 (and 30), Sisley et al does not explicitly disclose the rule engine comprises a forward chaining rule engine with different rule sets for each system agent (i.e., constraint processing technique, column 7, lines 60-67).

As per claims 6 (and 31), Sisley et al disclose the rule engine determines a primary scheduling algorithm and parameters to be used for scheduling jobs to workers (i.e., A/S system 12 uses a modified best first search that combines optimization, AI, and constraint-processing techniques, column 7, lines 60-63).

As per claims 7 (and 32), Sisley et al disclose the primary scheduling algorithm comprises a brute force-scheduling algorithm (i.e., modified best-first search, including optimization, column 7, lines 58-63)

As per claims 8 (and 33), Sisley et al disclose a round robin scheduling algorithm (i.e., pruning heuristics, including caching, column 22, lines 23-27).

As per claims 9 (and 34), Sisley et al disclose the primary scheduling algorithm comprises a scheduling algorithm that assigns jobs to workers that maximize the job's utility (i.e., A/S system generates assignment and scheduling recommendations

for all new calls as they are received and immediately readjusts the assignment resulting in global optimization, column 8, lines 2-5).

As per claims 10 (and 35), Sisley et al discloses the unassigned job queue is ordered from the highest utility to the lowest utility (i.e., a new call is received in queue 20 and the assigner module 22 to determine and order the existing set, column 8, lines 45-51).

As per claims 12 (and 37), Sisley et al disclose the algorithm comprises a rescheduling algorithm that is operable by determining the utility of unassigned jobs and rescheduling the assigned jobs, replacing some assigned jobs with unassigned jobs on workers' schedules, based on an added utility (i.e., generation of complete solution by the assigner module 22, by expansion of root node 72, wherein assignment of pending calls may be changed, column 8, lines 55-67).

As per claims 13 (and 38), Sisley et al disclose the step of maintaining a historical database that reflects all changes in system configuration, including targets and tasks, based on running system agents and on user interactions (i.e., data structures 26, 28 and 30, column 7, lines 22-24).

As per claims 14 (and 39), Sisley et al disclose the step of viewing status and changes of task, system agents and schedules of jobs within a business viewer (i.e., user interface 18, column 6, lines 28-32).

As per claims 15 (and 40), Sisley et al disclose the step of maintaining a system log of all activities (i.e., data structures 26, 28 and 30, column 7, lines 22-24).

As per claims 16 (and 41), Sisley et al disclose the step of maintaining a policy database that allows users to configure system agents and a plurality of use cases corresponding to human and system interaction and definitions (i.e., system users may assign relative weights to stress values to reflect management policies of the organization column 18, lines 1-2).

As per claims 17 (and 42), Sisley et al disclose the step of building definitions of targets and their tasks, according to the classification of the targets as templates, and using the templates to create each individual target of the classification (i.e., three main data structures including assignment set data structure 26, technician set data structure 28 and call set data structure 30, column 7, lines 22-35).

As per claim 18, Sisley et al disclose a computer implemented method for managing mobile workers (i.e., assignment and scheduling (A/S) system 12, column 5, lines 27-29) in an object oriented programming environment (i.e., common lisp object system, column 5, lines 31-35) comprising the steps of: classifying the attributes of each target object, including the tasks to be performed on each target object (i.e., environment characterized by three representational sets, including a call set defined by a plurality of customer service calls, column 5, lines 49-56); building user configured system agents and software components that automate the system environment for managing mobile workers (i.e., assignment set defined by a plurality of assignments of calls to the technicians, column 5, lines 56-57); scheduling mobile workers for the tasks to be performed on target objects by running a rule engine to determine the algorithms and heuristics to be used to schedule

mobile workers for the tasks to be performed (i.e., A/S system 12 generates assignment and scheduling recommendations, representing modifications of the assignment set, column 5, lines 59-63); configuring system agents and software components with user configured settings of a policy database that are reflective of a particular business (i.e., system users may assign relative weights to stress values to reflect management policies of the organization column 18, lines 1-2); and outputting a schedule of jobs to the mobile workers (i.e., output to interactive user interface 18, figure 1), and further comprising the step of creating jobs as a collection of tasks for a target that is to be scheduled (i.e., field service environment is characterized by three representational sets having dynamic attributes, including a call set defined by a plurality of customer service calls requiring repair services to be scheduled, column 5, lines 49-57) and controlled by a policy as the definitions, rules and business factors that control the behavior of system agents (i.e., the assigner module determines the service territory and skill level of each of the technicians by accessing the technician data structure, as determined by the requirements of the service organization, column 9, lines 26-34), comprising a planner agent that inventories items requiring work and determines tasks to schedule, the skills required to complete the tasks and material needs (i.e., A/S system 12 searches for assignment solutions, including attributes for each of the service calls and attributes for each of the assignments, column 6, lines 5-24); a schedule agent that matches skill resources to the demands of the job and creates a proposed schedule (i.e., A/S system 12 generates assignment and scheduling recommendations, representing

modifications of the assignment set, column 5, lines 59-63); a dispatcher agent for tracking the location and status of the workforce (i.e., user interface 18 receives field event data from the technicians, column 6, lines 35-41); a job state manager that maintains the state of active jobs and determines which jobs transition to new states (i.e., the assigner module 22 continuously updates the technician and call data structures to reflect changes in the field service environment, column 7, lines 37-40); and an event bus operative (i.e., service management system (SMS) interface 14, figure 1) with the system agents and database, wherein said system agents communicate across the event bus with the database and rule engine for implementing system agent functions based on events passed over the event bus (i.e., SMS interface 14, including the SMS translator 16 which receives the SMS access process 15 and translates it into SMS events for A/S system 12, column 6, lines 42-46).

As per claim 19, Sisley et al disclose the step of updating the policy database interactively wherein the system agents and other software components update their actions based on the present contents of the policy database (i.e., system users may assign relative weight to the component stress values, wherein the scheduler module 24 estimates the schedule stress value of the potential schedule by an objective function, column 18, lines 1-2 and column).

As per claim 20, Sisley et al disclose said step of simulating the workings of the system environment (i.e., system users may assign relative weight to the component

stress values, wherein the scheduler module 24 estimates the schedule stress value of the potential schedule by an objective function, column 18, lines 1-2 and column).

As per claim 21, Sisley et al does not explicitly disclose a) setting policy database values; b) simulating resultant operations of system agents and software components and viewing the results; c) iterating between steps a and b to view the impact of setting policy database variables to various values; and d) using the results of a through c to determine the optimum values to use for the policy values in a live operational system (i.e., system users may assign relative weight to the component stress values, wherein the scheduler module 24 estimates the schedule stress value of the potential schedule by an objective function, column 18, lines 1-2 and column).

As per claim 26, Sisley et al disclose a computer implemented method for managing mobile workers (i.e., assignment and scheduling (A/S) system 12, column 5, lines 27-29) in an object oriented programming environment (i.e., common lisp object system, column 5, lines 31-35) comprising the steps of: classifying within a database of a computer a plurality of target objects corresponding to facilities assets to be worked on by a mobile worker (i.e., environment characterized by three representational sets, including a call set defined by a plurality of customer service calls, column 5, lines 49-56); defining the attributes of each target object, including the tasks to be performed on each target object (i.e., assignment set defined by a plurality of assignments of calls to the technicians, column 5, lines 56-57); scheduling mobile workers for the tasks to be performed on target objects by running

a rule engine to determine the algorithms and heuristics to be used to schedule mobile workers for the tasks to be performed (i.e., A/S system 12 generates assignment and scheduling recommendations, representing modifications of the assignment set, column 5, lines 59-63), and further comprising the step of creating jobs as a collection of tasks for a target that is to be scheduled (i.e., field service environment is characterized by three representational sets having dynamic attributes, including a call set defined by a plurality of customer service calls requiring repair services to be scheduled, column 5, lines 49-57) and controlled by a policy as the definitions, rules and business factors that control the behavior of system agents (i.e., the assigner module determines the service territory and skill level of each of the technicians by accessing the technician data structure, as determined by the requirements of the service organization, column 9, lines 26-34), comprising a planner agent that inventories items requiring work and determines tasks to schedule, the skills required to complete the tasks and material needs (i.e., A/S system 12 searches for assignment solutions, including attributes for each of the service calls and attributes for each of the assignments, column 6, lines 5-24); a schedule agent that matches skill resources to the demands of the job and creates a proposed schedule (i.e., A/S system 12 generates assignment and scheduling recommendations, representing modifications of the assignment set, column 5, lines 59-63); a dispatcher agent for tracking the location and status of the workforce (i.e., user interface 18 receives field event data from the technicians, column 6, lines 35-41); a job state manager that maintains the state of active jobs and determines

which jobs transition to new states (i.e., the assigner module 22 continuously updates the technician and call data structures to reflect changes in the field service environment, column 7, lines 37-40); and an event bus operative (i.e., service management system (SMS) interface 14, figure 1) with the system agents and database, wherein said system agents communicate across the event bus with the database and rule engine for implementing system agent functions based on events passed over the event bus (i.e., SMS interface 14, including the SMS translator 16 which receives the SMS access process 15 and translates it into SMS events for A/S system 12, column 6, lines 42-46), and establishing a simulator database and running a simulator program to establish policy values in a simulation of the working of a system environment to determine optimum policy values for a given business (i.e., system users may assign relative weight to the component stress values, wherein the scheduler module 24 estimates the schedule stress value of the potential schedule by an objective function, column 18, lines 1-2 and column).

Claims 43-49 are rejected based upon the rejection of claims 1, 2, 4, 7, 8, 16 and 26, respectively, since they are the system claims corresponding to the method claims.

Claim Rejections - 35 USC § 103

6. Claims 3 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sisley et al (USPN 5,943,652), in view of Draves (USPN 5,873,124).

As per claims 3 (and 28), Sisley et al does not explicitly disclose communicating with a mobile worker via a telecommunications link and a hand-held, web based device. Draves discloses a computer system 40 including hand-held computers and internet terminals (column 4, lines 9-13) able to perform system-related tasks such as task scheduling (column 4, lines 62-64). Both Sisley et al and Draves are concerned with efficient task scheduling, therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to include communicating via a telecommunications link and a hand-held, web based device (i.e., hand-held computer) in Sisley et al, as seen in Draves, as an efficient means of communicating with the field technician in Sisley et al, making the system more robust.

7. Claims 11 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sisley et al (USPN 5,943,652).

As per claims 11 (and 36), Sisley et al does not explicitly disclose the unassigned job queue is ordered the lowest utility to the highest utility. However, Sisley et al disclose a new call is received in queue 20 and the assigner module 22 to determine and order the existing set (column 8, lines 45-51), thus disclosing assignment ordering in a queue. Therefore it would have been obvious to one having ordinary skill in the art, at the time the invention was made to include a job queue is ordered the lowest utility to the highest utility in Sisley et al, thus providing an efficient means of ordering queued assignments, thus making Sisley et al more robust.

Response to Arguments

8. In the Remarks, Applicant argues that Sisley et al does not disclose or suggest the target objects that correspond to the facilities assets with the different attributes of each object with the tasks to be performed. The Examiner respectfully disagrees and submits that Sisley et al disclose a field service environment characterized by three representational sets (i.e., objects) having dynamic attributes, including a call set defined by a plurality of customer service calls requiring repair services to be scheduled (column 5, lines 49-57), wherein each of the service calls includes a set of attributes (column 6, lines 5-15), thus indeed disclosing target objects that correspond to the facilities assets with the different attributes of each object with the tasks to be performed.

Applicant also argues that Sisley et al does not disclose or suggest creating jobs as a collection of tasks for a target that is being scheduled and controlled by a policy as the definitions, rules and business factors that control the behavior of system agents, including various combinations of the planner agent, schedule agent, dispatcher agent and job state manager that are operative with the database and rule engine for implementing system agent functions. The Examiner respectfully disagrees and submits that Sisley et al disclose a call set defined by a plurality of customer service calls requiring repair services to be scheduled (column 5, lines 49-57), thus indeed disclosing creating jobs as a collection of tasks for a target that is being scheduled. Moreover, Sisley et al disclose the assigner module determines the service territory and skill level of each of the technicians by accessing the

technician data structure, as determined by the requirements of the service organization, column 9, lines 26-34), thus indeed disclosing controlling by a policy as the definitions, rules and business factors that control the behavior of system agents. In addition, Sisley et al disclose A/S system 12, user interface 18, the assigner module 22, and SMS interface 14 (figure 1), including the SMS translator 16 which receives the SMS access process 15 and translates it into SMS events for A/S system 12 (column 6, lines 42-46), thus indeed disclosing various combinations of the planner agent, schedule agent, dispatcher agent and job state manager that are operative with the database and rule engine for implementing system agent functions.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre Boyce whose telephone number is (571) 272-6726. The examiner can normally be reached on 9:30-6pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

adb
January 22, 2006

ANDRE BOYCE
PATENT EXAMINER
A.U. 3623